

# Patents Recently Issued to IBM Inventors

July and August 1970

## July 1970

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|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 3,518,756 | Fabrication of Multilevel Ceramic, Microelectronic Structures.....                                                                      | <i>M. Bennett, W. E. Boyd and J. C. Nobile</i>                     |
| 3,519,355 | Light Filter.....                                                                                                                       | <i>R. S. Schools and G. T. Sincerbox</i>                           |
| 3,519,498 | Ferromagnetic Film.....                                                                                                                 | <i>K. Y. Ahn</i>                                                   |
| 3,519,504 | Method for Etching Silicon Nitride Films with Sharp Edge Definition..                                                                   | <i>J. J. Cuomo</i>                                                 |
| 3,519,747 | Signal Insertion and Conferencing in a Resonant Transfer Integrated<br>Time Division Switching and Frequency Division Multiplexing..... | <i>C. D. Avers and P. M. Thrasher</i>                              |
| 3,519,760 | Magnetic Duplicating Apparatus Using a Multiple Gap DC Head....                                                                         | <i>E. T. Hatley</i>                                                |
| 3,519,788 | Automatic Registration of an Electron Beam.....                                                                                         | <i>M. Hatzakis</i>                                                 |
| 3,519,801 | Record Card Processing Machine.....                                                                                                     | <i>G. F. Nielsen, D. K. Rex, R. E. Schopp<br/>and L. A. Wilson</i> |
| 3,519,807 | Digital Controller with Alarm.....                                                                                                      | <i>J. O. Jacques and R. K. Oswald</i>                              |
| 3,519,830 | Method and Means for Maintaining the Resolution of a Scanning System<br>Having an Undefined Object Plane.....                           | <i>L. A. Kamensky</i>                                              |
| 3,519,844 | Electro-optical Logic Circuits Performing NOR Functions.....                                                                            | <i>I. G. Akmenkalns</i>                                            |
| 3,519,845 | Current Mode EXCLUSIVE-OR Invert Circuit.....                                                                                           | <i>M. T. Larriva</i>                                               |
| 3,519,850 | Differential Sense Amplifier and Detector Circuit.....                                                                                  | <i>R. Smith</i>                                                    |
| 3,519,953 | High Speed Scanlaser.....                                                                                                               | <i>R. L. Gamblin and D. D. Roshon</i>                              |
| 3,519,999 | Thin Polymeric Film Memory Device.....                                                                                                  | <i>L. V. Gregor</i>                                                |
| 3,520,000 | Two-dimensional Delay Line Memory.....                                                                                                  | <i>W. G. Spruth</i>                                                |
| 3,520,532 | Document Handling Mechanism.....                                                                                                        | <i>D. D. Towne</i>                                                 |
| 3,520,664 | Magnetic Thin-film Device.....                                                                                                          | <i>D. B. York</i>                                                  |
| 3,520,784 | Method of Preparing a Coupled-film Device.....                                                                                          | <i>G. S. Alberts, J. M. Brownlow and K. R.<br/>Grebe</i>           |
| 3,520,810 | Manufacture of Single Crystal Semiconductors.....                                                                                       | <i>T. S. Plaskett, J. M. Woodall and W. C.<br/>Wuestenhoefer</i>   |
| 3,520,998 | Resonant Transfer of Energy Between Bandpass Filters of Unequal<br>Bandwidth.....                                                       | <i>P. M. Thrasher and R. J. Ward</i>                               |
| 3,521,018 | Temperature Sensor.....                                                                                                                 | <i>F. E. Boerger and W. H. White, Jr.</i>                          |
| 3,521,033 | Record Card Reader.....                                                                                                                 | <i>G. H. May</i>                                                   |
| 3,521,041 | Digital Filters.....                                                                                                                    | <i>R. Van Blerkom and D. G. Freeman</i>                            |
| 3,521,042 | Simplified Digital Filter.....                                                                                                          | <i>R. Van Blerkom, D. G. Freeman and<br/>R. J. Ward</i>            |
| 3,521,043 | Ripple-free Binary Coded Decimal Accumulator Forming Correct<br>Result During Single Memory Accessing Cycle.....                        | <i>B. G. Thompson</i>                                              |
| 3,521,068 | Optical Time Division Multiplex Communication System.....                                                                               | <i>J. A. Armstrong and W. V. Smith</i>                             |
| 3,521,092 | Data Storage Extended Stroke Actuator.....                                                                                              | <i>C. H. Kalthoff</i>                                              |
| 3,521,113 | Electron Beam Apparatus Incorporating a Hollow Pyramidal Indirectly<br>Heated Cathode Member.....                                       | <i>A. N. Broers</i>                                                |
| 3,521,133 | Superconductive Tunneling Gate.....                                                                                                     | <i>W. R. Beam</i>                                                  |
| 3,521,141 | Leakage Controlled Electric Charge Switching and Storing Circuitry..                                                                    | <i>C. A. Walton</i>                                                |
| 3,521,180 | Active Transmission Line Device.....                                                                                                    | <i>W. Jutzi</i>                                                    |
| 3,521,241 | Two-dimensional Data Compression.....                                                                                                   | <i>D. H. Rumble</i>                                                |
| 3,521,243 | Frequency Memory Using a Gunn-effect Device in a Feedback Loop..                                                                        | <i>P. L. Fleming</i>                                               |
| 3,521,269 | Tracking Analog-to-digital Converter.....                                                                                               | <i>E. G. Brooks and J. S. Gentelia</i>                             |
| 3,522,344 | Flexible Self-supporting Cut-resistant Writing Element.....                                                                             | <i>H. T. Findlay</i>                                               |
| 3,522,372 | Frequency Modulated Signal Switching with Frequency Divided Output.                                                                     | <i>J. L. Adkisson and A. B. Manildi</i>                            |

## August 1970

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| 3,522,597 | Execution Plotter.....                                                                                                                                                     | <i>R. W. Murphy</i>                                     |
| 3,523,037 | Epoxy Resin Composition Containing Brominated Polyglycidyl Ether<br>of Bisphenol A and A Polyglycidyl Ether of Tetrakis (Hydroxyphenyl)<br>Ethane.....                     | <i>L. N. Chellis</i>                                    |
| 3,523,046 | Method of Epitaxially Depositing Single-crystal Layer and Structure<br>Resulting therefrom.....                                                                            | <i>E. G. Grochowski and V. J. Lyons</i>                 |
| 3,523,229 | Digital-analog Servo System.....                                                                                                                                           | <i>R. J. Black, F. J. Sordello and J. S.<br/>Swartz</i> |
| 3,523,287 | Recording and Playback System Incorporating a First Character Posi-<br>tioning System.....                                                                                 | <i>D. J. Morrison and H. C. Tanner</i>                  |
| 3,523,291 | Data Transmission System.....                                                                                                                                              | <i>J. M. Pierret</i>                                    |
| 3,523,352 | Apparatus for Mounting Semiconductor Chips with Ball Contacts upon<br>a Substrate and Forming Electrical Strap Connections to the Substrate<br>from the Ball Contacts..... | <i>C. P. Hayunga</i>                                    |

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| 3,523,495 | Apparatus for Forming Circuit Masks on Photosensitized Screens and Inspecting the Same and/or Inspecting Substrates Having Conductive Circuit Patterns ..... | <i>G. R. Giedd and M. H. Perkins</i>                                                |
| 3,523,706 | Apparatus for Supporting Articles without Structural Contact and for Positioning the Supported Articles .....                                                | <i>J. C. Logue</i>                                                                  |
| 3,523,790 | Enhanced and Stable Photographic Images .....                                                                                                                | <i>A. W. Grobin, Jr.</i>                                                            |
| 3,523,824 | Metallization of Plastic Materials .....                                                                                                                     | <i>J. V. Powers and L. T. Romankiw</i>                                              |
| 3,523,834 | Method of Deburring .....                                                                                                                                    | <i>T. F. Hewins</i>                                                                 |
| 3,524,026 | Remote Dictation Apparatus with Automatic Control Tone Elimination .....                                                                                     | <i>M. P. Langendorf, C. L. Ridings and W. H. Sebastian</i>                          |
| 3,524,047 | Photosensitive Sensing System .....                                                                                                                          | <i>W. H. Gorder and N. D. Kline</i>                                                 |
| 3,524,067 | Compact Line Grating Position Sensing Device .....                                                                                                           | <i>D. L. West</i>                                                                   |
| 3,524,113 | Complementary PNP-NPN Transistors and Fabrication Method therefor .....                                                                                      | <i>B. Agusta and N. D. Lubart</i>                                                   |
| 3,524,125 | Monolithic Stabilized Reference Voltage Source .....                                                                                                         | <i>H. H. Berger, N. M. Callaghan, K. K. Najmann and L. J. Ruggeri</i>               |
| 3,524,164 | Detection and Error Checking System for Binary Data .....                                                                                                    | <i>C. W. Cox and F. T. May</i>                                                      |
| 3,524,181 | Display System .....                                                                                                                                         | <i>T. N. Criscimagna and T. G. Floros</i>                                           |
| 3,524,182 | Display System .....                                                                                                                                         | <i>T. N. Criscimagna</i>                                                            |
| 3,524,252 | Method of Ultrasonically Treating Ferrite Cores .....                                                                                                        | <i>R. W. Dam and B. Gogos</i>                                                       |
| 3,524,383 | Pneumatic Actuator .....                                                                                                                                     | <i>C. H. Locke</i>                                                                  |
| 3,524,394 | Monolithic Circuit Manufacture and Photoresist Exposure Technique Utilized therein .....                                                                     | <i>B. Sunners</i>                                                                   |
| 3,524,497 | Heat Transfer in a Liquid Cooling System .....                                                                                                               | <i>R. C. Chu, M. G. Cohen and O. Gupta</i>                                          |
| 3,524,527 | Alternate Character Selection Mechanism for Typewriters .....                                                                                                | <i>R. V. Davidge</i>                                                                |
| 3,524,540 | Dust Cover and Knob Assembly .....                                                                                                                           | <i>S. F. Brown and D. L. Massee</i>                                                 |
| 3,524,602 | Endless Ribbon Cartridge .....                                                                                                                               | <i>P. J. Greene and J. D. Sbarra</i>                                                |
| 3,524,928 | High Speed Optical Scanning System .....                                                                                                                     | <i>T. A. Hoskins</i>                                                                |
| 3,524,953 | Object Presence Sensor .....                                                                                                                                 | <i>C. P. Coughlin, G. H. Luhrs and R. W. Thorpe</i>                                 |
| 3,525,013 | Metallic Ion Source Including Plurality of Electron Guns .....                                                                                               | <i>J. C. Pelton, Jr. and R. C. Senger</i>                                           |
| 3,525,066 | Electrical Contact Pins and Method of Making Same .....                                                                                                      | <i>R. A. Magee and J. S. Scioscia</i>                                               |
| 3,525,074 | Detection of Too Many or Too Few Characters .....                                                                                                            | <i>A. Cutaia</i>                                                                    |
| 3,525,084 | Memory Sense System with Fast Recovery .....                                                                                                                 | <i>L. J. Dunlop and P. Rohr</i>                                                     |
| 3,525,140 | Micro-motion Device .....                                                                                                                                    | <i>R. P. Cachon, J. C. Miller and L. S. Scheiner</i>                                |
| 3,525,295 | Automatic Film Processor .....                                                                                                                               | <i>R. B. Mulbany and C. C. Roshon</i>                                               |
| 3,525,518 | Self-adjusting and Repositioning Card Gate .....                                                                                                             | <i>A. Oaten</i>                                                                     |
| 3,525,638 | Magnetostriction Control in Magnetic Thin Films .....                                                                                                        | <i>W. B. Archey</i>                                                                 |
| 3,525,680 | Method and Apparatus for the Radio Frequency Sputtering of Dielectric Materials .....                                                                        | <i>P. D. Davidse and W. J. Kleinfelder</i>                                          |
| 3,525,870 | Magnetic Memory having Polarized State Detector .....                                                                                                        | <i>R. E. MacDonald, C. D. Mee and O. Voegeli</i>                                    |
| 3,525,937 | Matched Impedance Test Probe Fixture .....                                                                                                                   | <i>D. T. Mozer</i>                                                                  |
| 3,525,984 | Electronic Computing Business Machine .....                                                                                                                  | <i>E. C. Clay, P. J. De George, W. I. Lockett, W. L. McDonald and J. R. Stewart</i> |